In re Watson

(CCPA)
186 USPQ 11

Decided June 5, 1975
No. 74-577
U.S. Court of Customs and Patent Appeals

Headnotes

PATENTS

1. Board of Appeals — General affirmance (§ 19.25)

Examiner's rejection not reversed by Board is deemed affirmed.

2. Evidence — Judicial notice (§ 36.20)

Court of Customs and Patent Appeals takes judicial notice, under 44 U.S.C. 1507, of Food and Drug Administration order in 37 Fed. Reg. 20160 (1972).

3. Patentability — Utility (§ 51.75)

Court of Customs and Patent Appeals rejects challenge to In re Anthony, 162 USPQ 594; "safety" is relative matter, absolute proof of safety being realistically impossible; Congress has given primary administrative jurisdiction over the safety of pharmaceuticals to federal agencies other than the Patent and Trademark Office.

4. Claims — Indefinite — Chemical (§ 20.553)

Words and phrases (§ 70.)

In re Frederiksen, 102 USPQ 35, is authority for proposition that phrase "an effective amount" is indefinite if claim fails to state function to be achieved.

5. Construction of specification and claims — By prior art (§ 22.20)

Claim language must be read in light of application disclosure as it would be interpreted by one of ordinary skill in art.

Particular patents — Oral Composition

Watson, Oral Composition, rejection of claims 1-6 reversed.

Case History and Disposition:

Appeal from Board of Appeals of the Patent and Trademark Office.

Application for patent of Charles Andrew Watson, Serial No. 64,126, filed July 31, 1970. From decision rejecting all claims, applicant appeals. Reversed.

Attorneys:

Arnold Grant, New York, N. Y. (John A. Finken, Arlington, Va., of counsel) for appellant.

Joseph F. Nakamura (Fred W. Sherling, of counsel) for Commissioner of Patents and Trademarks.

Judge:

Before Markey, Chief Judge, and Rich, Baldwin, Lane, and Miller, Associate Judges.

Opinion Text

Opinion By:

Lane, Judge.

This is an appeal from the decision of the Patent and Trademark Office (PTO) Board of Appeals affirming the examiner's rejections of all the claims (claims 1-6) under 35 USC 101, 102, and 112 (first paragraph) and of claims 1, 2, and 4-6 under 35 USC 112 (second paragraph)

in appellant's patent application Serial No. 64,126, [1] filed July 31, 1970, for "ORAL COMPOSITIONS." We reverse all rejections.

The Application Disclosure

Appellant's application describes the invention in the following way:

> This invention relates to oral compositions.
>
> It has been proposed to include germicides, for example hexachlorophene, in compositions for oral hygiene. Examples of such compositions where inclusion of a germicide has been proposed are dentifrices and mouthwashes. The inclusion of germicides in such compositions produces a beneficial effect in the mouth but it is however limited because the germicide is retained in the oral cavity for only a short time.

It is an object of the present invention to provide a means of producing a longer germicidal effect in the mouth.

It has been found that this can be achieved by including in the oral composition, particles of a water-insoluble material which have been pretreated with a germicide so that they are impregnated with the germicide. The longer-lasting germicidal effect produced by oral compositions incorporating such germicide—containing particles is believed to be due to the trapping of some of the particles in crevices in the mouth and release of germicide from such particles.

Accordingly, the present invention provides an oral composition comprising particles of a water-insoluble material which have been impregnated with a germicide.

The water-insoluble material should, of course, be nontoxic; the particles are preferably white or nearly white. Suitable as the particles are plastics materials, especially thermoplastic resins. Preferred plastics materials are polyvinylchloride, polyethylene, polypropylene, polymethylmethacrylate, and copolymers of polyvinylchloride and polyvinyl alcohol. The particles desirably have a size less than 50 microns. Especially suitable are particles having a size within the range of 0.1 to 20 microns.

While hexachlorophene is the preferred germicide that is used, other germicides known in the art as suitable for use in oral hygiene may be used, for example chlorhexidene, tyrothricin and quaternary ammonium germicides.

The particles of the water-insoluble material may be impregnated with the germicide by pretreating them with a solution of the germicide in a solvent capable of being absorbed by the particles whereby the germicide diffuses into and is absorbed by the particles. To increase the

rate of diffusion of the solvent and germicide into the particles the treatment is preferably carried out at an elevated temperature.

The oral composition may be in the form of a dentifrice or in the form of a mouthwash or other product for the care of the oral cavity.

The amount of the germicide in the particles is preferably at least 0.05% by weight of the oral composition.

* * * The particles preferably contain at least 0.1% by weight of absorbed germicide, preferably 1% or more of germicide.

The application contains five examples of various types. Example 1 describes how to impregnate polyvinylchloride particles with hexachlorophene and how to make a dentifrice containing the impregnated polyvinylchloride particles. The content of hexachlorophene in the particles is 6% by weight, and the impregnated particles are 30% by weight of the dentifrice. Example 2 describes a dentifrice containing polyethylene particles impregnated with hexachlorophene. Example 3 describes a toothpaste containing particles of polymethylmethacrylate impregnated with hexachlorophene. Example 4 describes a toothpaste containing particles of a copolymer of polyvinylchloride and polyvinyl alcohol impregnated with hexaclorophene.

Example 5 describes "a typical mouthwash preparation in accordance with the invention" as follows:

Table set at this point is not available. See table in hard copy or call BNA PLUS at 1-800-452-7773 or 202-452-4323.

The Claimed Subject Matter

Claims 1-6 are drawn to mouthwash preparations. Independent claim 1 generically recites a mouthwash as follows:

> 1. In a liquid mouthwash preparation having a liquid vehicle and *an effective amount* of a germicide suitable for use in oral hygiene, the improvement which comprises providing said germicide in the form of non-toxic, water-insoluble thermoplastic resinous particles having a size less than 50 microns, said particles being impregnated with said germicide suitable for use in oral hygiene in an amount of at least about 0.1 per cent of said particles by weight. [Emphasis ours.]

Dependent claims 2-6 further define the mouthwash preparation of claim 1 as follows:

> 2. A mouthwash preparation in accordance with claim 1 wherein said water-insoluble thermoplastic resinous particles are between 0.1 and 20 microns in diameter.

3. A mouthwash preparation in accordance with claim 1 wherein the amount of said water-insoluble thermoplastic resinous germicide-impregnated particles

is sufficient to provide at least 0.05 per cent germicide by weight of the mouthwash composition.

4. A mouthwash preparation in accordance with claim 1 wherein said water-insoluble thermoplastic resinous particles are selected from the group consisting of polyvinylchloride, polyethylene, polypropylene, polymethylmethacrylate and copolymers of polyvinylchloride and polyvinyl alcohol.

5. A mouthwash preparation in accordance with claim 1 wherein said germicide is hexachlorophene.

6. A mouthwash preparation in accordance with claim 1 wherein said water-insoluble thermoplastic resinous germicide impregnated particles contain at least about 1 per cent by weight germicide.

The References

The five references relied on by the examiner and the board are:

(1) French Patent 1,504,155, Oct. 23, 1967.

(2) The Washington Sunday Star, July 27, 1969, page B-2.

(3) Accepted Dental Therapeutics, 1969/1970, 33rd Ed., American Dental Assoc., pages 140, 147 and 245.

(4) Dubos et al., Bacterial and Mycotic Infections of Man, J.B. Lippincott Co., (1952) page 663.

(5) Simonds-Church, The Encyclopedia of Basic Materials for Plastics, Reinhold Pub. Co. (1967), page 246.

The references cited by appellant are:

(1) Sturzenberger et al., J. Periodont. Res., 3:299-301 (1968).

(2) Stallard et al., J. Periodont. Res., 4:683-94 (1969).

(3) Gjermo et al., J. Periodont. Res., 5:102-09 (1970).

(4) Loe et al., in Dental Plaque, 247-56 (W. McHugh ed. 1970).

(5) Flotra et al., Scand. J. Dent. Res., 80:10-17 (1972).

The § 101 Rejection

Claims 1-6 stand rejected "for lack of proof of utility under 35 USC 101." In the Examiner's Answer, three grounds were given for this rejection. The first ground was that "appellant is alleging that the claimed compositions produce a beneficial effect in the mouth" and that "[t]his beneficial effect is alleged to be [the] result of the germicidal component of the compositions," but that "the art does not recognize *any beneficial* effect resulting from the indiscriminate destruction of germs in the mouth." (Emphasis ours.) In support of this ground, the examiner cited The Washington Sunday Star (hereinafter Sunday Star) and Accepted Dental Therapeutics (hereinafter ADT).

Sunday Star states in part:

> The next time you see an advertisement for a mouthwash on television, read over the following sentence from a recent report of medical experts to the Food and Drug Administration:
>
> "There is no convincing evidence that any medicated mouthwash, used as a part of a daily hygiene regimen, has therapeutic advantage over a physiologic saline (salt) solution or even water."
>
> This is the conclusion of a panel of specialists assembled by the National Academy of Sciences in connection with the Academy's review of hundreds of drugs that never had to be proved effective before they were put on public sale.
>
> Merely reducing the number of bacteria in the mouth, they said, may do more harm than good under normal conditions, for it may upset a natural balance and cause "undesirable effects."
>
> For 17 years, medicated mouthwashes have been on the list of unacceptable products maintained by the American Dental Association's Council on Dental Therapeutics.
>
> As a result, it is rare to find a dentist who will recommend anything but plain water or salt solution for cleansing the mouth even after oral surgery.
>
> According to panel members, advertisements for mouthwashes should not make any claims beyond the matter of flavor. Whether ads are changed accordingly, however, will be up to federal agencies.

ADT states in part (footnotes omitted):

[p. 140]

> Preparations of penicillin were once used for topical application in the mouth. However, such use has the potentiality of inducing penicillin sensitivity, of producing reactions in

the sensitized patient, and of producing penicillin-resistant organisms locally in the mouth as well as elsewhere in the body.

Topical application of penicillin in the mouth has produced a variety of unfavorable local reactions such as * * *.

In view of the overwhelming disadvantages of the topical application of

Page 14

penicillin, its use for the local treatment of oral disease is contraindicated.

[p. 147]

* * * Tetracycline, chlortetracycline, oxytetracycline, and dimethylchlortetracycline possess essentially similar anti-bacterial spectra. * * *

* * * The observation that a substantial number of strains of group A beta hemolytic streptococci are resistant to the tetracyclines led to the suggestion that these antibiotics should not be employed as prophylactic agents against transient bacteremias associated with dental procedures.

[p. 245]

Many germicidal claims are included in mouthwash advertising directed either to the dentist or to the public. Attention should therefore be directed to the following considerations: (1) No method is yet available to give a thoroughly satisfactory comparison of germicidal agents in a test tube with the same agents under the actual conditions of their use in the oral cavity. (2) There is no adequate evidence that the average normal person benefits by a nonspecific change in the oral flora. (3) Considerable uncertainty still exists concerning the role of microorganisms as etiologic agents of many oral diseases.

The second ground for the § 101 rejection was that Simonds-Church "teaches that there is no rule to predict the efficacy of a microbiocide in various plastics." In the examiner's view, Simonds-Church shows that "not all microbiocides function in plastics and that small changes in the character of the plastics gives rise to large changes in the effect of the microbiocides."

Simonds-Church states in part:

FUNGICIDES

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In general, extremely susceptible plasticizers comprise * * *.

Resistant plasticizers include: * * *.

The necessity of preventing the decay of the plastic composition or the disfigurement of the surface led to the testing of a wide variety of microbicides.

Microbicides for plastics must meet many requirements, including resistance to leaching, low volatility, negligible effect on appearance and on physical and electrical properties, low toxicity, durability, and ease of incorporation. Most important, however, is the compatibility with the plastic and plastic composition, which includes plasticizers, stabilizers, ultraviolet absorbers, and fillers.

The complete list of microbicides which have been recommended or used at one time or another for plastic compositions would undoubtedly number thousands, but it is indicative of the severity of the requirements for a successful product that there are probably less than a dozen compounds which are being used commercially with varying degrees of efficiency.

[At this point, the reference discusses the following compounds: salicylanilide, phenyl mercury acetate, zinc dimethyldithiocarbamate, copper 8-quinolinolate, dodecyldimethylbenzyl ammonium napthenate, chloronitrobenzoic acid esters, chlorinated phenols, tributyltin oxide, triphenyltin chloride, and N-(trichloromethylthio) phthalimide.]

There seems to be no rule to predict the efficiency of a microbicide in various plastics. A compound that works well in polyvinylchloride may be totally useless in polyethylene, or even in another polyvinylchloride resin. In general, one can only postulate that certain microbicides have better chances of functioning in plastics than other compounds, and it is necessary to test each proposed composition to insure that the results are as desired. Changes in average molecular weight or distribution of molecular weight of the polymer, modification of the plasticizer, stabilizer or method of processing — any of these could have a profound effect on the activity of a microbicide.

The third ground of the § 101 rejection was lack of safety. It was the examiner's view that ADT (p. 140) "teaches that the topical application of penicillin in the mouth is contraindicated in view of the overwhelming disadvantages," and that ADT (p. 147) "teaches that tetracyclines suppress the growth of many bacterial organisms and use of this agent may result in the overgrowth of yeast-like organisms in the mouth, thus resulting in oral moniliasis." The examiner then cited Dubos et al. (hereinafter Dubos) for the proposition "that moniliasis is fatal." The examiner reasoned that "the destruction of beneficial bacteria in the mouth would lead to the increase of a death-producing organism which is normally held

under control by these bacteria. [therefore] those skilled in the art would not consider the use of

appellant's compositions safe for human use."

Dubos states in part:

> *Candida albicans* may cause infections of the mucous membranes of the mouth (thrush) * * *.
>
> * * * Occasionally, the fungus spreads to the skin and gastro-intestinal tract to produce a generalized, fatal moniliasis.

The § 112, First Paragraph, Rejection

Claims 1-6 also stand rejected under the first paragraph of 35 USC 112 "as depending on a defective specification." The ground for this rejection was explained by the examiner as follows:

> To the extent that appellant's disclosure may be interpreted as reciting a utility, the compositions of this invention are indicated as having a beneficial effect in the mouth. This allegation fails to recite a definite utility. Since the specification fails to set forth a specific utility and since those skilled in the art do not recognize any utility resulting from the indiscriminate destruction of bacteria in the mouth, it is believed that the specification is defective in failing to recite a utility for the claimed compositions.

The § 102 Rejection

Claims 1-6 also stand rejected under 35 USC 102 "as fully met by the French patent" since "[t]he reference discloses all the features called for by the appealed claims." The French patent appears to disclose the present invention, and it also claims priority based upon British application No. 51752/65 (see note 1, supra). The examiner's reasoning was that the disclosure of the present application does not satisfy the requirements of the first paragraph of 35 USC 112 because it "fails to recite a definite utility," that the disclosure in appellant's grandparent application (see note 1, supra) is similarly deficient, and that therefore appellant is not entitled under 35 USC 120 to the benefit of the filing date of the grandparent application.

The § 112, Second Paragraph, Rejection

Finally, claims 1, 2, and 4-6 stand rejected as failing to comply with the second paragraph of 35 USC 112. The examiner's position was that these claims are indefinite because they use the expression "an effective amount," but they do not recite "the effect sought to be produced * * * and apparently different effects may be obtained with different amounts * * *." As authority for this ground of rejection, the examiner cited In re Frederiksen, 41 CCPA 927, 213 F.2d 547, 102 USPQ 35 (1954).

The Pader Affidavit

Appellant respondent to the § 101 rejection by submitting an affidavit executed by Morton Pader, PhD, who had been employed by Lever Brothers Company since 1950 doing experimental

work "in the edible and toiletry fields." The relevant portion of the affidavit reads as follows:

> In view of the rejection of the application as being directed to subject matter which those skilled in the art would not accept as obviously valid and correct, the following test was made under my direction and supervision:

Preparation of Powders

> One part of hexachlorophene was dissolved in a mixture of 5 parts of propylene glycol and 20 parts of glycerin. Ten parts of polyvinylchloride powder (particle size in the range 1 to 20 microns) were then added. The mixture was stirred at 90° to 100°C for 1 hour. The mixture was then cooled and the powdered plastic material filtered off, washed with hot propylene glycol followed by distilled water and dried in an oven at 50°C. The content of hexachlorophene in the particle was determined by Gilford UV spectroscopy and found to be 4.5%.

Preparation of Active and Control Oral Rinses

> The hexachlorophene impregnated powders were dispersed in production Pepsodent Antiseptic at a level of 4.0%. The powders therefore contributed a concentration of 0.18% hexachlorophene to the rinse. This 0.18% in addition to the 0.02% already present (in solution) in the Pepsodent Antiseptic gave a final total concentration of 0.2% hexachlorophene in the rinse.
>
> Production Pepsodent Antiseptic was used as a control rinse. A concentration of hexachlorophene greater than 0.02% could not be provided in the control because of the relative insolubility of that material in the mouthwash vehicle.

Protocol for Antiplaque Evaluation

> A 21-membered split panel crossover test design was used. The subjects brushed and rinsed (20 cc for 30 sec.) three times a day for three days followed by a period of rinsing only (3 times daily for 3 days). All of the panelists used Pepsodent

> toothpaste. After the no-brushing period, their plaque and pellicle were visualized with a disclosing solution and clinical scores were taken. 15 of the 21 subjects completed the study. 6 of the subjects did not finish the study for reasons entirely unrelated to the study proper, e.g., being away on business on the day of scoring.

Results

> On the basis of data obtained from the clinical scoring, the experimental rinse containing hexachlorophene impregnated powders was found to be significantly better at reducing plaque ($p<0.01$) than the control rinse. The mean percent reduction versus the

control was 21.20% (average for all surfaces). Actual average scores were 1.837 for the control rinse and 1.448 for the experimental rinse.

It is well established that reduction of plaque levels results in a corresponding reduction in dental calculus.

Formulae

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No adverse effects were noted on any of the subjects during the course of this test. [Emphasis ours.]

Commenting on the foregoing affidavit, the examiner stated:

It is known * * * that chelating agents do cause a reduction [of] dental plaque and that the single compound tested according to the Pader affidavit is a chelating agent. It is not apparent how appellant can conclude that germicides are beneficial in the mouth from a showing that one chelating agent which is also [a] germicide shows beneficial effects. As the evidence of record shows, the expected effect of germicides in the mouth would be to destroy the natural bacterial population in the mouth and thus give rise to an overgrowth of monilia which are normally held under control by oral bacteria. This overgrowth of monilia would be expected to lead to death. This is not a statutory utility.

The Board

In affirming the § 101 rejection, the board stated:

The record before us contains no clear and convincing evidence that such prolonged action is not of sufficient duration and potency as to give rise to serious and even fatal problems with yeast-like fungi that give rise to moniliasis when the inhibiting influence of oral bacteria is absent by reason of the inactivation of the bacteria over a substantial period of time. Nor is there any instruction given in the specification as to how to avoid these problems, if in fact they can be avoided. We note further that the likelihood of such problems occurring is rendered even more acute by reason of the general availability of mouthwashes and dentifrices to the public without a prescription, and hence without benefit of the advice of a physician. We are constrained therefore to agree with the Examiner that there is a lack of proof of utility (35 U.S.C. 101), since unless the claimed composition can be used safely, it becomes useless.

The board also affirmed the rejection based on the second paragraph of § 112. The board said that the expression "an effective amount" provided "no indication of the purpose for which the amount is effective, nor does the specification provide any guidelines in this respect."

The board also affirmed the rejection based on § 102 and supported their decision by stating that appellant was not entitled to the filing date of his grandparent application because that application "also lacks proof of utility."

[1] The board's opinion does not mention the rejection based on the first paragraph of § 112. Since the board did not reverse this rejection made by the examiner, the board is deemed to have affirmed the rejection. See In re Pye, 53 CCPA 877, 355 F.2d 641, 148 USPQ 426 (1966).

The Solicitor

The solicitor agrees with the examiner and the Board with respect to the rejections under §§ 101 and 112, second paragraph. In regard to the § 101 rejection, the associate solicitor stated at oral hearing:

> We are directly challenging some of the things the court said in the In re Anthony [56 CCPA 1443, 414 F.2d 1383, 162 USPQ 594 (1969)] case.

Additionally, the solicitor points out that dependant claim 5 recites a mouthwash wherein the germicide is hexachlorophene, and, therefore, the solicitor request that we

take judicial notice under 44 USC 1507 [2] of the contents of 37 Fed. Reg. 20160 (1972), where, according to the solicitor, the Food and Drug Administration determined that hexachlorophene is not suitable for use on mucous membrane.

With respect to the rejections under §§ 112, first paragraph, and 102, the solicitor states that these rejections stand or fall with the rejection under § 101 since they involve the same issues.

Opinion

I. The §§ 101, 102, and 112, First Paragraph, Rejections

We agree with the solicitor's analysis that the rejections under §§ 102 and 112, first paragraph, stand or fall with the rejection under § 101 because they involve the same issues.

The general issue here is whether the claimed subject matter is "useful" as required by 35 USC 101. [3] See In re Langer, 503 F.2d 1380, 183 USPQ 288 (CCPA 1974). The specific issues relate to the three grounds given for the § 101 rejection.

A. The First Ground

The first ground for the § 101 rejection was that the art does not recognize any "beneficial" effect resulting from germicidal action in a mouthwash. It appears that the examiner hypothetically conceded operability of the claimed subject matter when he stated this ground. In other words, the examiner hypothetically conceded that germicidal action is produced by the

claimed mouthwash, but the examiner maintained that the art does not recognize *any beneficial* effect from such action.

Assuming that this is a proper ground for a § 101 rejection, we find that Sunday Star and ADT do lend some support to the examiner's position. In Sunday Star, the sentence quoted from "a recent report" is very broad. It states that there is "no convincing evidence that *any* medicated mouthwash * * * has therapeutic advantage over a physiologic saline (salt) solution or even water." (Emphasis ours.) Furthermore, the reference states: "For 17 years, medicated mouthwashes have been on the list of unacceptable products maintained by the American Dental Association's Council on Dental Therapeutics." In ADT (p. 245), there appears the statement: "There is no adequate evidence that the average normal person benefits by a nonspecific change in the oral flora."

Appellant's rebuttal evidence is in two forms: (1) the Pader affidavit; and (2) appellant's literature references. The affiant stated: *"It is well established that reduction of plaque levels results in a corresponding reduction in dental calculus."* (Emphasis ours.)

Appellant's literature references contain the following:

(1) Sturzenberger et al. state in part:

> *It is generally accepted that the prevention or reduction of dental plaque or microcosm is beneficial for the improvement and maintenance of oral health.* * * * In his investigation of antiseptic rinses on the growth of dental plaque, Arnim found that the bacterial plaques still continued to grow in extent when mouthwashing was the only form of oral hygiene performed. However, this growth was less rapid *when a mouthwash containing a quaternary ammonium compound was* used several times during the day. * * * The clearance of oral debris after eating was enhanced best by mouthrinsing with an antiseptic-containing quaternary compound and a surfactant in comparison to water. * * * Ball and Ball observed in periodontal practice that rinsing with a mouthwash containing a quaternary (cetyl pyridinium chloride) was more effective in postoperative care than a saline rinse. [Emphasis added and footnotes omitted.]

(2) Stallard et al. state in part:

> *It has recently been reported that an antimicrobial material, designated as CC 10232, has demonstrated a profound effect in the prevention of bacterial plaque and calculus formation.* * * *
>
> The bacterial plaque studies conducted with mouth rinses containing various concentrations of CC 10232 were one week dualphased human clinical studies. The results indicated that mouth rinses

containing either 0.1%, 0.01% or 0.005% CC 10232 were all equally effective * * * in

preventing plaque accumulation. Additionally, the mouth rinse containing 0.01% CC 10232 *reduced calculus* accumulation approximately 64% after six weeks of use, and approximately 81% after 12 weeks use. All mouth rinses were used twice daily one minute for each rinsing. [Emphasis added and footnote omitted.]

(3) Gjermo et al. state in part:

Bacterial plaque on the teeth is generally regarded as a dominant etiological factor in caries and periodontitis: Gingivitis develops within 2-3 weeks if plaque is allowed to accumulate at the gingival margin * * * and after a period of about 4 weeks without oral hygiene, early carious lesions may be detected on tooth surfaces covered with plaque. * * *

Mouthrinses with various antibacterial agents have been shown to reduce the number of bacteria in the saliva temporarily * * *. [Emphasis added.]

(4) Loe et al. state in part:

Bacterial plaque plays a decisive role in the initiation and development of marginal periodontal disease and caries. Consisting almost exclusively of micro-organisms and intermicrobial substance produced by the bacteria, plaque builds up from the gingival margin * * *.

Plaque micro-organisms originate from the microflora of the oral cavity. [Emphasis added.]

(5) Flotra et al. state in part:

Several antibacterial substances have been tested in the oral cavity both in animals and man * * *. The chlorhexidine salts seem to be of particular interest. Schroeder * * * *observed a reduction in calculus formation of 73% by rinsing with 0.1% chlorhexidine acetate,* and Loe * * * showed a total inhibition of *plaque formation* for more than three weeks when daily rinsing was performed with 0.2% chlorhexidine gluconate. Chlorhexidine seems to exert an *antibacterial activity* on the tooth surface for several hours after application * * *.[Emphasis added.]

Appellant's rebuttal evidence makes it unnecessary for us to pass on the question of whether Sunday Star and ADT are sufficient evidence to establish a prima facie case for lack of art recognition of any beneficial effect resulting from germicidal action in a mouthwash, since, even if they are, the prima facie case which that would make for the PTO has been overcome by the evidence introduced by appellant. The weight of the evidence supports appellant's position that the art does recognize a beneficial effect from germicidal action in a mouthwash.

B. The Second Ground

The second ground for the § 101 rejection was lack of operability. According to the

examiner, Simonds-Church teaches that operability of a "microbiocide" is unpredictable "in various plastics." From this evidence, the examiner concluded that those skilled in the art would not accept appellant's allegation of "utility" (i.e., operability).

Simonds-Church discusses the problem of preventing decay in plastic materials caused by fungi which can feed on certain plasticizers incorporated in the plastic. The microbiocides are added to the plastic and are designed to *remain in* the plastic to prevent fungal growth. Thus, Simonds-Church refers to "resistance to leaching" as a "requirement." Appellant's claimed mouthwash, however, is intended to *release* germicide *from* the plastic particles. Thus, Simonds-Church is not sufficiently relevant to provide a basis for one skilled in the art to question the operability of the claimed subject matter. Accordingly, we hold that the evidence of record does not establish a prima facie case on this ground of rejection.

C. The Third Ground

The third and final ground for the § 101 rejection was lack of *safety*. The examiner cited ADT (p. 140), ADT (p. 147), and Dubos as evidence that "those skilled in the art would not consider * * * appellant's compositions safe for human use." Appellant submitted the Pader affidavit which describes a six day test using a mouthwash containing 0.2% hexachlorophene, and affiant states that "[n]o adverse effects were noted on any of the [human] subjects during the course of this test." The board affirmed the examiner. On appeal, the solicitor challenges the soundness of In re Anthony, supra, and denies the safety of a mouthwash containing hexachlorophene, as recited in claim 5, on the basis of a Food and Drug Administration order.

[2] Under 44 USC 1507 (see note 2, supra), we take judicial notice of the Food and Drug Administration order in 37 Fed. Reg. 20160 (1972). The order states (37 Fed. Reg. at 20163-64):

> (a) *Antibacterial component.* The use of hexachlorophene as an antibacterial component
>
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>
> in drug and cosmetic products has expanded widely in recent years. * * *
>
> (b) *Adverse effects.* Though considered safe for many years, recent information has become available associating hexachlorophene with toxic effects, including deaths. * * * The accumulated evidence of toxicity is sufficient to require that continued marketing of hexachlorophene containing products be carefully defined in order to protect consumers.
>
> (c) *Prescription drugs.* (1) Because of their potential for harmful effect, drugs containing hexachlorophene, other than as a preservative as described below, are not considered to have been shown to be safe and effective, are regarded as new drugs requiring approved new drug applications, and would be misbranded for over-the-counter distribution. In the interest of public health protection, hexachlorophene containing drugs

will be regarded as misbranded and subject to regulatory proceedings unless the label bears the legend "Caution: Federal law prohibits dispensing without a prescription," * * *.

(d) *Over-the-counter (OTC) drugs.* Over-the-counter drug products may contain hexachlorophene only as part of an effective preservative system, at a level that is no higher than necessary to achieve the intended preservative function and in no event higher than 0.1 percent. * * *

(e) *Cosmetics.* Hexachlorophene may be used as a preservative in cosmetic products, at a level that is no higher than necessary to achieve the intended preservative function, and in no event higher than 0.1 percent.

(f) *Content statement.* * * *

(g) *Shipments of products.* * * *

(h) *Prior notices.* * * *

[(i)] *Effective date.* * * *

[3] We reject the challenge to In re Anthony. Furthermore, the following portion of Anthony is pertinent to the instant ground of rejection (56 CCPA at 1455-57, 414 F.2d at 1394-95, 162 USPQ at 603-04):

Although the patent statutes do not establish "safety" as a criterion for patentability of any of the statutory classes of patentable subject matter mentioned in § 101, yet it is undoubtedly true, as demonstrated by some of the cases cited by the examiner, that the Patent Office and the courts over the years have considered "safety" as an aspect of the broader question of whether certain inventions — pharmaceuticals in particular — are "useful" within the meaning of § 101 and its predecessors. No one, we suppose, would seriously maintain that, as a matter of policy, a composition unsafe for use by reason of extreme toxicity to the point of immediate death under *all* conditions of its sole contemplated use in treating disease of the human organism would nevertheless be useful within the meaning of the patent laws.

But at the same time it must be recognized that "safety" is a relative matter, and that absolute proof of complete safety is realistically impossible. As this court pointed out in In re Hartop, [50 CCPA 780, 311 F.2d 249, 135 USPQ 419 (1962)]:

With regard to the * * * nature of "safety" in the field of drugs and medicaments, we take judicial notice that many valued therapeutic substances or materials with desirable physiological properties, when administered to lower animals or humans, entail certain risks or may have undesirable side effects. True it is that such substances would be *more* useful if they were not dangerous or did not have undesirable side effects, but the fact remains that they *are* useful, useful to doctors, veterinarians and research workers, useful to patients, both human and lower animal, and so are useful within the meaning of

35 U.S.C. 101. The use of drugs in medicine is frequently a matter of balancing risks to save a life.

And Congress has given the responsibility to the FDA, not to the Patent Office, to determine in the first instance whether drugs are sufficiently safe for use that they can be introduced in the commercial market, under the conditions prescribed, recommended, or suggested in the proposed labeling thereof, as the majority of this court also noted in Hartop:

However, regardless of the issuance of the patent under the circumstances of the case at bar, there is no question but that the public must be protected absolutely against the advertising and sale and other distribution of harmful drugs, medicines and the like in all situations, including this one if such be the case. We believe that Congress has recognized this problem and has clearly expressed its intent to give statutory authority and responsibility in this area to Federal agencies different than that given to the

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Patent Office. This is so because the standards established by statute for the advertisement, use, sale or distribution of drugs are quite different than the requirements under the Patent Act for the issuance of a patent. For example, the Federal Trade Commission has been given the responsibility of enforcing the Wheeler-Lea amendments to the Federal Trade Commission Act. Also, the Food and Drug Administration has been given the responsibility of enforcing the Federal Food, Drug, and Cosmetic Act. [Footnotes omitted.]

As this court stated in Anthony, "safety" is a relative matter, absolute proof of safety is realistically impossible, and in the safety of pharmaceuticals Congress has given primary administrative jurisdiction to federal agencies other than the PTO. Assuming (as the solicitor contends) the Food and Drug Administration order determines that hexachlorophene is not suitable for use on mucous membrane, and assuming this is sufficient evidence to establish a prima facie case for lack of safety under § 101 (viz, that a mouthwash containing hexachlorophene is unsafe by reason of hexachlorophene being associated with toxic effects sufficient to require that continued marketing of hexachlorophene-containing products be carefully defined in order to protect consumers), nevertheless the Pader affidavit demonstrates, at least over a short period of use, that a mouthwash containing hexachlorophene, as in claim 5, meets the minimum level of safety needed to satisfy § 101.

With regard to the remaining claimed subject matter other than claim 5, ADT and Dubos are not sufficiently relevant to provide a basis for one skilled in the art to question that the claimed subject matter meets the minimum level of safety needed to satisfy § 101. Thus, with respect to the remaining claimed subject matter, we hold that the evidence of record does not establish a prima facie case for lack of safety under § 101.

Since we reverse the rejection based on § 101, we also reverse the rejections based on §§ 102

and 112, first paragraph, which stand or fall with the § 101 rejection.

II. The § 112, Second Paragraph, Rejection

The issue here is whether the phrase "an effective amount" used in independent claim 1 is indefinite under 35 USC 112, second paragraph. [4] Dependent claim 3 was not rejected on this ground.

The examiner and the board expressed the view that claim 1 does not recite the effect sought to be produced or the purpose for which the amount is effective, and the examiner cited In re Frederiksen, supra, as authority for this ground of rejection.

[4] Frederiksen is authority for the proposition that the phrase "an effective amount" is indefinite when the claim fails to state the function which is to be achieved. The appealed claim in Frederiksen recited "an effective amount of the diethylamino ethanol ester of phenaceturic acid." The claim completely failed to state the effect sought to be produced.

The present case is distinguishable, however, since claim 1 recites "an effective amount of a germicide suitable for use in oral hygiene." The very term "germicide," used in this claim, indicates that germicidal action is the effect sought to be produced. Hence, the recitation points out both the effect sought to be produced and the purpose of that effect, viz, germicidal action in oral hygiene.

[5] Moreover, the claim language must be read in light of the application disclosure as it would be interpreted by one of ordinary skill in the art. See In re Moore, 58 CCPA 1042, 439 F.2d 1232, 169 USPQ 236 (1971). Those skilled in the art will be able to determine from the disclosure, including the examples, what an effective amount of germicide is. Cf. In re Mattison, 509 F.2d 563, 184 USPQ 484 (CCPA 1975). In the context of the claimed subject matter, the disputed phrase reasonably defines the metes and bounds of the invention to one of ordinary skill in the art. See In re Halleck, 57 CCPA 954, 422 F.2d 911, 164 USPQ 647 (1970); and In re Fuetterer, 50 CCPA 1453, 319 F.2d 259, 138 USPQ 217 (1963); cf. In re Caldwell, 50 CCPA 1464, 319 F.2d 254, 138 USPQ 243 (1963). We hold that claims 1, 2 and 4-6 are not indefinite under § 112, second paragraph.

The decision of the board is reversed.

Footnotes

Footnote 1. Appellant's "Petition of Appeal" states that this application is a continuation of application Serial No. 836,217, filed June 12, 1969, which was a continuatino of application Serial No. 599,692, filed December 9, 1966. The "Declaration, Power of Attorney, and Petition" in the present application makes a claim for priority under 35 USC 119 on British application No. 51752/65, filed December 7, 1965.

Footnote 2. § 1507. Filing document as constructive notice; publication in Federal Register as presumption of validity; judicial notice; citation

> The contents of the Federal Register shall be judicially noticed and without prejudice to any other mode of citation, may be cited by volume and page number.

Footnote 3. § 101. Inventions patentable

Whoever invents or discovers any new and *useful* process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title. [Emphasis ours.]

Footnote 4. § 112. Specification

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

- End of Case -

